

**What is claimed is:**

1. A CDMA receiving apparatus comprising:

a searcher section which has a protection path memory, generates a delay profile from a reception signal, finds peaks from said delay profile based on a variable peak level reference threshold value and a variable noise level reference threshold value which are determined based on said delay profile, reads out protection path data in a previous cycle from said protection path memory, and determines timings of valid paths based on timing of said found peaks and protection path timings of the read out protection path data;

a finger section which detects a signal from said reception signal for every path in response to said valid path timings;

a RAKE synthesizing section which carries out RAKE synthesis to the detected signals to produce a RAKE synthesis signal; and

a decoding section which decodes said RAKE synthesis signal.

2. The CDMA receiving apparatus according to claim 1, wherein said searcher section variably determines said variable peak level reference threshold value and said variable noise level reference threshold value based on a maximum peak

level and a noise level in said delay profile.

3. The CDMA receiving apparatus according to claim 2, wherein said searcher section has a threshold value memory storing a maximum peak level threshold value and a noise level threshold value, and

5           said searcher section calculates a level difference between said maximum peak level and said noise level in said delay profile, and reads out said maximum peak level threshold value and said noise level threshold value from said threshold value memory  
10 based on said level difference, and determines said variable peak level reference threshold value and said variable noise level reference threshold value based on said maximum peak level and said noise level in said delay profile and said maximum peak level  
15 threshold value and said noise level threshold value.

4. The CDMA receiving apparatus according to claim 3, wherein said searcher section determines said variable peak level reference threshold value by subtracting said maximum peak level threshold value  
5 from said maximum peak level, and said variable noise level reference threshold value by adding said noise level threshold value to said noise level.

5. The CDMA receiving apparatus according to

claim 3, wherein said maximum peak level threshold value has a larger value when said level difference is larger and said noise level threshold value has a smaller value when said level difference is smaller.

6. The CDMA receiving apparatus according to claim 1, wherein said searcher section finds said peaks from said delay profile based on said variable peak level reference threshold value and said variable noise level reference threshold value which are determined based on said protection path data in addition to said delay profile.

7. The CDMA receiving apparatus according to claim 6, wherein said searcher section variably determines said variable peak level reference threshold value and said variable noise level reference threshold value based on a maximum peak level for said valid paths indicated by said protection path data and a noise level in said delay profile.

8. The CDMA receiving apparatus according to claim 7, wherein said searcher section has a threshold value memory storing a maximum peak level threshold value and a noise level threshold value, and said searcher section calculates a level

difference between said maximum peak level and said noise level in said delay profile, and reads out said maximum peak level threshold value and said noise level threshold value from said threshold value memory  
10 based on said level difference, and determines said variable peak level reference threshold value and said variable noise level reference threshold value based on said maximum peak level and said noise level in said delay profile and said maximum peak level  
15 threshold value and said noise level threshold value.

9. The CDMA receiving apparatus according to claim 8, wherein said searcher section determines said variable peak level reference threshold value by subtracting said maximum peak level threshold value  
5 from said maximum peak level, and said variable noise level reference threshold value by adding said noise level threshold value to said noise level.

10. The CDMA receiving apparatus according to claim 8, wherein said maximum peak level threshold value has a larger value when said level difference is larger and said noise level threshold value has a  
5 smaller value when said level difference is smaller.

11. The CDMA receiving apparatus according to claim 1, wherein said searcher section variably

determines said variable peak level reference  
threshold value and said variable noise level

5 reference threshold value based on a time average of  
peak levels of said valid paths indicated by said  
protection path data and a time average of noise  
levels in place of said maximum peak level and said  
noise level in said delay profile.

12. The CDMA receiving apparatus according to  
claim 11, wherein said searcher section has a  
threshold value memory storing a maximum peak level  
threshold value and a noise level threshold value, and

5 said searcher section calculates a level  
difference between said peak level time average and  
said noise level time average, and reads out said  
maximum peak level threshold value and said noise  
level threshold value from said threshold value memory  
10 based on said level difference, and determines said  
variable peak level reference threshold value and said  
variable noise level reference threshold value based  
on said maximum peak level and said noise level in  
said delay profile and said maximum peak level  
15 threshold value and said noise level threshold value.

13. The CDMA receiving apparatus according to  
claim 12, wherein said searcher section determines  
said variable peak level reference threshold value by

subtracting said maximum peak level threshold value  
5 from said maximum peak level, and said variable noise  
level reference threshold value by adding said noise  
level threshold value to said noise level.

14. The CDMA receiving apparatus according to  
claim 12, wherein said maximum peak level threshold  
value has a larger value when said level difference is  
larger and said noise level threshold value has a  
5 smaller value when said level difference is smaller.

15. A method of determining path timings in a  
CDMA receiving apparatus comprising the steps of:

(a) generating a delay profile from a  
reception signal;

5 (b) finding peaks from said delay profile  
based on a variable peak level reference threshold  
value and a variable noise level reference threshold  
value which are determined based on said delay  
profile;

10 (c) reads out protection path data in a  
previous cycle from said protection path memory; and

(d) determining timings of valid paths based  
on timing of said found peaks and protection path  
timings of the read out protection path data.

16. The method according to claim 15, wherein

said (b) step comprises the step of:

(e) variably determining said variable peak level reference threshold value and said variable  
5 noise level reference threshold value based on a maximum peak level and a noise level in said delay profile.

17. The method according to claim 16, wherein said (e) step comprises the steps of:

(f) calculating a level difference between said maximum peak level and said noise level in said  
5 delay profile;

(g) reading out a maximum peak level threshold value and a noise level threshold value from a threshold value memory based on said level difference, said threshold value memory storing said  
10 maximum peak level threshold value and said noise level threshold value; and

(h) determines said variable peak level reference threshold value and said variable noise level reference threshold value based on said maximum  
15 peak level and said noise level in said delay profile and said maximum peak level threshold value and said noise level threshold value.

18. The method according to claim 17, wherein said (h) step comprises the step of:

(i) determining said variable peak level  
reference threshold value by subtracting said maximum  
5 peak level threshold value from said maximum peak  
level, and said variable noise level reference  
threshold value by adding said noise level threshold  
value to said noise level.

19. The method according to claim 17, wherein  
said maximum peak level threshold value has a larger  
value when said level difference is larger and said  
noise level threshold value has a smaller value when  
5 said level difference is smaller.

20. The method according to claim 15, wherein  
said (b) step comprises the step of:

(j) finding peaks from said delay profile  
based on a variable peak level reference threshold  
5 value and a variable noise level reference threshold  
value which are determined based on said protection  
path data in addition to said delay profile.

21. The method according to claim 20, wherein  
said (j) step comprises the step of:

variably determining said variable peak level  
reference threshold value and said variable noise  
5 level reference threshold value based on a maximum  
peak level for said valid paths indicated by said



protection path data and a noise level in said delay profile.

22. The method according to claim 15, wherein said (b) step comprises the step of:

(k) variably determining said variable peak level reference threshold value and said variable  
5 noise level reference threshold value based on a time average of peak levels of said valid paths indicated by said protection path data and a time average of noise levels in place of said maximum peak level and said noise level in said delay profile.

23. A CDMA receiving apparatus comprising:

a reference threshold value calculating section which calculates a threshold value;

a determining section which selects ones more  
5 than the threshold value calculated by said reference threshold value calculating section from among a plurality of paths;

a protection processing section which determines a valid path from the paths selected by  
10 said determining section and indicates a timing of the valid path;

a finger section which detects said valid path using the timing of the valid path indicated by said protection processing section;

15           a RAKE synthesizing section which adds a  
level of the valid path detected by said finger  
section; and

          a level difference calculating section which  
calculates a level difference between a maximum peak  
20 level of the path and a noise level, and

          wherein said reference threshold value  
calculating section calculates said threshold value in  
accordance with said level difference.

24.       A CDMA receiving apparatus comprising:

          a reference threshold value calculating  
section which calculates a threshold value;

          a determining section which selects a path  
5 more than said threshold value calculated by said  
reference threshold value calculating section from  
among a plurality of path;

          a protection processing section which  
determines a valid path from the paths which are  
10 selected by said determining section and indicates a  
timing of a valid path;

          a finger section which detects said valid  
path using the timing of said valid path indicated by  
said protection processing section;

15           a RAKE synthesizing section which adds a  
level of said valid path which is detected by said  
finger section; and

a level difference calculating section which  
calculates a level difference between a maximum peak  
20 level of said valid path and a noise level, and

wherein said reference threshold value  
calculating section calculates said threshold value in  
accordance with said level difference.

1. A method for determining a level difference between a maximum peak level of a valid path and a noise level, comprising the steps of: